cèrtain structures and behavior. We have in each case the same underlying conditions leading to the same results. There is in the body cavity of the beetle, with its liquid contents, sufficient space and food for the development of one mature Braconid larva, hardly for more than one, a condition that we find parallelled in the nest cell of the leaf-cutter bee with its limited space and supply of bee-bread. In each instance the first stage larvae carry on a fierce struggle among themselves for the undisputed control of space and food supply necessary for the development of one individual.

The first stage larva of *Anastatus* sp. (Eupelmidae) is, according to Parker and Thompson⁹, like the same stage in Callimomidae, Eurytomidae and Leucospidae, having a brownish, heavily chitinized head capsule, which changes its shape through moulting, and becomes white (less chitinized). These authors inform us that there are "a number of well-defined larval types within the superfamily Chalcidoidea," and they further state that "these types are readily recognizable only in the primary larvae." This applies also to the parasitic bees of the genus *Coclio.rys*, in which the first stage is the characteristic stage in the life of the larva.

Two New Species of Thrips (Thysanoptera).

By GLENN W. HERRICK, Cornell University, Ithaca, New York.

Thrips veratri n. sp.— φ . Length 1.28 mm. to 1.32 mm.; width of mesothorax .31 mm.; greatest width of abdomen .38 to .39 mm. General color, reddish to smoky-brown with the abdomen somewhat darkest.

Head a little wider than long; wider behind than in front; sides immediately behind the eyes plainly concave; sides and dorsum behind rough with transverse ridges; eyes protruding slightly, black with a row of transparent facets on the edge of each and a few hairs between the facets. One small, sharp, spine on the hind border of each postocular concavity. Ocelli conspicuous, close together, and each bordered with a dark crescent. The ocelli lie between the posterior half of the com-

⁹ H. L. Parker and W. R. Thompson, Notes on the larvae of the Chalcidoidea. Ann. Ent. Soc. Am., Vol. 18, pp. 384-398, pl. 26-28 (1925).

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pound eyes. Antennae about twice as long as the head; their bases separated by the notched prolongation of the vertex; actual and relative length of segments as follows: 1-22, 2-46, 3-59, 4-59, 5-46, 6-66, 7-21 microns.



Fig. 1.-Head of Thrips veratrin. sp.

Basal segment subglobular, second segment constricted at base, third and fourth fusiform, fifth constricted at base and broadly joined to the sixth which is fusiform while the seventh is short and tapering. Color, one and two dark, reddishbrown, three noticeably lighter, the remaining segments smoky-brown. The segments bear numerous long spines.

Prothorax about one and one-fourth times as wide as the head and about the same length as the head. It is concolorous with the head. There are two long spines at each posterior angle and one short curved spine at each anterior angle. Pterothorax about one and one-third times as wide as the prothorax and slightly longer than it is wide, the mesothorax wider than the metathorax, dorsal surface of mesothorax plainly reticulated. The wings are well developed and distinctly brownish but lighter toward base. The hind wings are lighter than the front ones. The front vein of fore wing bears a group of seven to eight spines at base, one spine from one-half to two-thirds of the distance from base, one spine about threefourths of the distance from base and two more spines, one near the end and one at the end. The hind vein bears about ten spines. Legs concolorous with each other but the tibia and tarsi of each are lighter than the femur and somewhat lighter than the body. The legs in bleached specimens are plainly reticulated, particularly the femora. The legs are fairly spinose with a comb-like row of about ten strong spines on the inner sides of the hind tibiae.

Abdomen at base considerably narrower than pterothorax, gradually widening to and including the fifth segment, and tapering sharply beyond the seventh. In general, it is elongate oval in shape and somewhat darker brown than the prothorax. In bleached specimens the abdomen shows the reticulations while the spines along the sides and around the end of the abdomen are long and large; hind margin of eighth segment on dorsal side bears a row of comb-like spines. The pleurites of the abdomen are conspicuous and each is toothed at the posterior end.

Described from many individual females taken at one collection from the undersides of the leaves of American white hellebore (*Vcratrum viride*), at Ithaca, New York, on June 27, 1924. No males have been found. The thrips live in the creases on the undersides of the leaves of this plant and have always been in abundance. Indeed most of the leaves are usually found to be seriously injured by the thrips. The epidermis on the underside is usually scarified and destroyed giving the leaves a brown, scorched appearance. The species certainly stands very near *Thrips impar*, but is apparently distinct from the latter although the distinctive characters are difficult to define. The third antennial segment seems lighter than that of *impar* and the whole body darker than that of the latter species.

Cotypes 'are deposited with the United States National Museum. Others are in the collection of Cornell University, Ithaca.

Microthrips leucus n. sp.— \mathfrak{P} . Length 0.82 mm. (0.75 to 0.96 mm.). General color pale, almost white and transparent.

The front wings are considerably darker than the body and the ovipositor, being heavily chitinzed, is conspicuous from its brownish-yellow appearance.

Head, including mouthparts, longer than wide, widest through the eyes (vertex); the cheeks conspicuously convex but narrowing rapidly to the mouth cone; there are two weak pale bristles between the compound eves, each one just posterior to the base of an antenna; a short pale spine on each cheek just back of each compound eve; the mouthparts reach well backward to the middle of the prothorax and are black at the tip; eves strongly protruding, coarsely granulate, and conspicuously black with an edging of transparent facets; the ocelli are difficult to detect, the anterior one most prominent and well forward while the posterior ones appear to be wide apart and in line with the hind third of the compound eves; the maxillary palpi are two-segmented and white. The antennae are seven-segmented, the lengths of the segments are as follows: 1-20, 2-26.4, 3-36, 4-34, 5-33, 6-31.3, 7-36.3 microns.

The first segment is short, wide, and cylindrical, the second is large, globular and ringed with conspicuous chitinous ridges, the third is long and pedunculate with a conspicuous reentrant angular process in side view on the anterior third in which is a long prominent, curved, sensory spine and nearby two prominent straight spines (Fig. 2); the fourth and fifth are



Fig. 2.-Antenna, side view, of Microthrips leucus n. sp.

slightly pedunculate; the sixth is cylindrical but tapering somewhat anteriorly while the seventh is long and slender and tapers slightly to the end. Each of the segments bears several conspicuous spines along the sides (Fig. 2). The antennae, as a whole, are brownish and considerably darker than the body and nearly concolorous with the front wings. The first segment is lightest, the second darkest while the remaining ones are nearly of the same shade although there is a slight deepening in color from the third to the seventh.

The prothorax is wider that the head and considerably widest at the posterior margin; there is one weak spine and one fairly strong spine at each posterior angle. The dorsal

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side is striated but not strongly so. The pterothorax of about the same width throughout but slightly constricted in the middle and with the posterior angles of the metathorax strongly rounded. The pterothorax is much wider than the prothorax.

The wings reach nearly to the end of the abdomen: fore wings decidedly dark in color, so much so that the specific name might well be nigripennis; they are strong and heavy and thickly beset with rows of very short, black spines; the costal margin bears about 22 long slender hairs on the distal two-thirds with about 12 much shorter spines on the proximal third; the hind vein joins the fore vein at the end of the proximal fifth of the wing and the two anastomosed veins then run very nearly to the tip of the wing considerably nearer the costal than the hind margin: there are five minute spines on the vein widely spaced, the distal one much the largest and strongest. The hind wings are very narrow, nearly transparent whitish with the longitudinal vein decidedly brownish and conspicuous. The legs are concolorous with the body, the ends of the tarsi being somewhat darker; each hind tibia bears two rather stout spines at its inner extremity while each hind tarsus bears one spine in a similar position and a weaker spine opposite.

The abdomen is wider than the pterothorax at the fourth and fifth segments but tapers rapidly beyond to the tenth; tenth as wide at the base as it is long with the sides nearly straight and slightly converging and with the end broadly rounded. Near the tip of the tenth segment there are at least four colorless spines on both the dorsal and ventral sides. There are also four similar, perhaps slightly stronger spines at the end of the ninth segment with other additional ones along each side.

The nymphs of this species are delicate, whitish and almost transparent with the legs and antennae concolorous with the body.

This species clearly falls in the genus *Microthrips*, because of its 2-segmented maxillary palpus, its 7-segmented antennae (1-segmented style) and the anastomosing of the longitudinal veins of the front wings. It is also distinct from the one other species in this genus, *M. piercei* Morg., because of its characteristic delicate, whitish, transparent appearance and its conspicuous dark fore wings which offer a striking contrast to the body as a whole. It is separated from the genus *Leuco*-

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thrips by its 7-segmented antennae and by the form and structure of the antennal segments.

The genus *Microthrips* was erected by A. C. Morgan in 1914 and described, together with the one species, *M. piercei*, in the *Proceedings of the United States National Museum*, Vol. 46, p. 19-21, 1914. Figure 28 of the antenna, which Morgan gives in connection with the description of *M. piercei*, answers well for this second new species.

Described from several females taken from a single lowgrowing, narrow-leaved fern (*Asplenium*?) in the greenhouse at East Lansing, Michigan, by Miss E. I. McDaniel and Mr. Donald Ries on April 20, 1925, at one collection. Hence all specimens are looked upon as cotypes.

Cotypes are deposited in the United States National Museum. Others are retained in the Collection of Cornell University, Ithaca.

I am indebted to Dr. H. Priessner for his conressy in making an examination of these two species of thrips and in expressing the opinion that they were new species. Also to A. C. Morgan for his trouble in examining the second species and comparing it with *Microthrips picrcei*.

The North American Species of Ilybius (Coleoptera, Dytiscidae).

By H. C. FALL, Tyngsboro, Massachusetts.

No table including all our described species of *Hybius* has ever been offered; which fact, together with the rather monotonous similarity in appearance of the species, has made accurate determinations rather difficult, and led to considerable confusion in many collections. There are, however, a number of good characters, both structural and sexual, and with both sexes present, or at least the male, the student should be able in most cases to make reliable determinations.

Dr. Sharp has shown that the genus may be divided into two nearly equal groups, as follows.